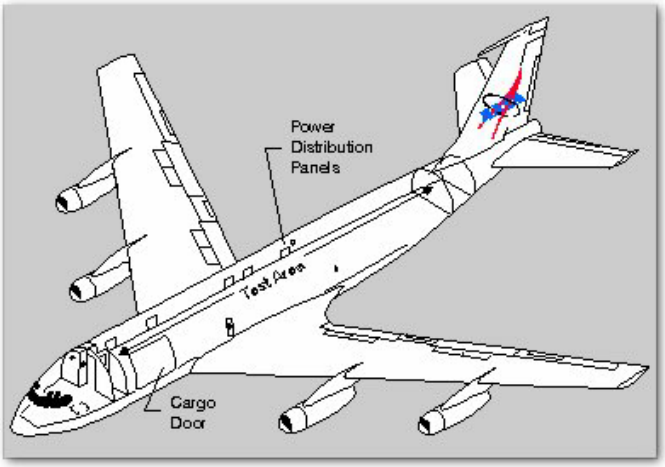
About The KC-135A Aircraft

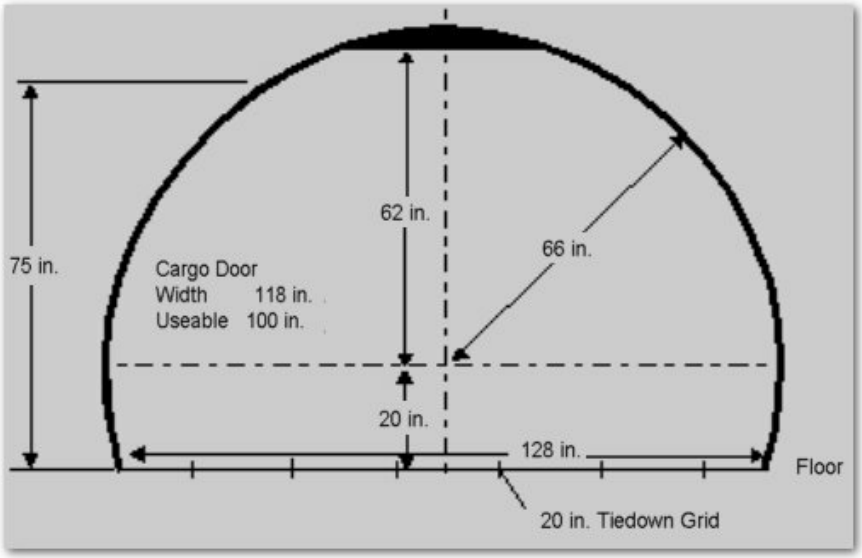
Aircraft: A four-engine turbojet aircraft similar to the commercial Boeing 707
Crew: Pilot, copilot, flight engineer, and two reduced gravity test directors



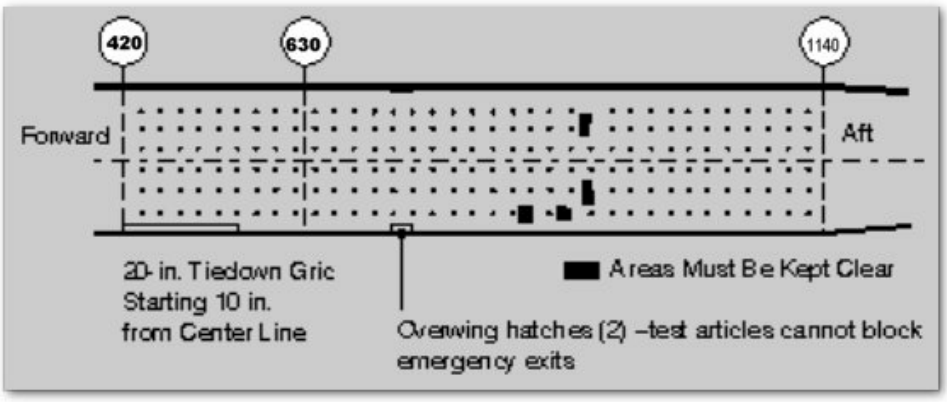
Aircraft Description and Provisions

- Electrical power available

  -- 28VDC, 80 amps
  -- 110VAC, 400 Hz, single phase, 50 amps
  -- 110VAC, 400 Hz, three phase, 50 amps per phase
  -- 110VAC, 60 Hz, single phase, 120 amps
- Still and motion picture photography and video provided
- Most test equipment bolted to the floor using 20-inch tiedown grid attachment points
- Vent/vacuum system to dump fluids overboard
- Liquid or gaseous nitrogen available
- Breathing air available



Cabin Cross-Section View (up) /Floor Plan (down)



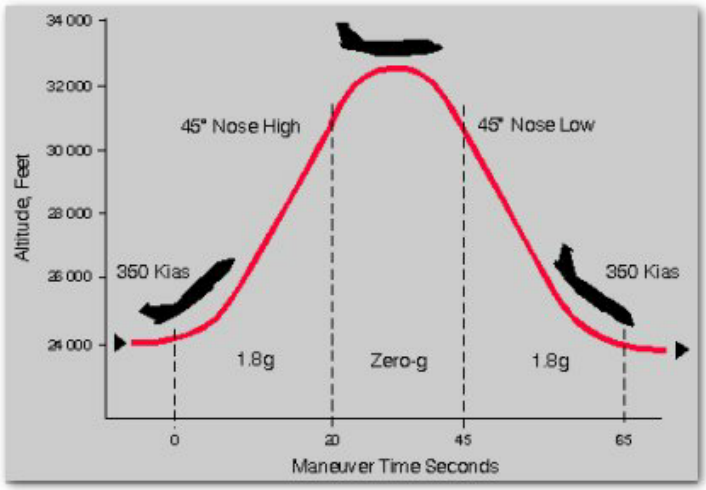
Cargo Bay

The KC-135A cargo bay test area is approximately 60 feet long, 10 feet wide, and 7 feet high. The aircraft is equipped with electrical power, an overboard vent system, and photographic lights. Air and nitrogen sources are also available. Ground facilities include a test equipment build-up area, briefing room, fax, and telephones.

Typical Mission

A typical mission is 2 to 3 hours long and consists of 30 to 40 parabolas. These parabolas can be flown in succession or with short breaks between maneuvers to reconfigure test equipment. The Reduced Gravity Office provides scheduling, test coordination, and in-flight direction for the test programs.

KC-135 Flight Trajectory



The above diagram shows a typical zero-g maneuver. However, the maneuver can be modified to provide any level of g-force less than one g. Some typical g-levels used on different tests and the corresponding time for each maneuver are as follows:

- Negative-g: (-0.1 g): Approximately 15 seconds
- Zero-g: Approximately 25 seconds
- Lunar-g: (one-sixth g): Approximately 40 seconds
- Martian-g: (one-third g): Approximately 30 seconds

The History of KC-135A
Reduced Gravity Research Program

The Boeing Military Airplane Company's model 367-80 was the basic design for the commercial 707 passenger plane as well as the KC-135A Stratotanker. In 1954 the Air Force purchased the first 29 of its future fleet of 732. The first aircraft flew in August 1956 and the initial-production Stratotanker was delivered to Castle Air Force Base, Calif., in June 1957. The last KC-135A was delivered to the Air Force in 1965.

NASA's Reduced Gravity Program was started in 1959 to investigate human and hardware reactions to operating in a weightless environment. The reduced gravity environment is obtained with a specially modified KC-135A turbojet transport, which flies parabolic arcs to produce weightless periods of 20 to 25 seconds. The KC-135A can also provide short periods of lunar (1/6) and Martian (1/3) gravity. Approximately 80,000 parabolas have been flown in support of the Mercury, Gemini, Apollo, Skylab, Space Shuttle, and Space Station programs.